**TITLE: LOW INTERNAL IMPEDANCE CURRENT POOL FOR A CHARGING/DISCHARGING DEVICE**

## BACKGROUND OF THE INVENTION

(a) Field of the Invention

Charging/Discharging Device to be connected into a tank of identical polarity electrodes, or a tank of dissimilar polarity electrodes by means of coupling conductors, whereof current pooling terminals of identical potentials and identical polarity are in parallel, or serving to be connected with current pooling terminals between pole boards of dissimilar polarities in a tank of dissimilar electrodes, executed in serial connection or compound serial/parallel connection; on the exterior side of the electrode board, of positive or negative polarity, on both sides of the individually installed electrode tank is executed a low resistance current pool structure of any chosen geometry to facilitate infeeding/outfeeding of confluent currents, executed in the form of inflowing/effluent pooling terminals, or that incorporated with parallel current pool conductor, or as made from material of better conductivity with a view to reduce the resistance to infeeding/outfeeding confluent currents.

(b) Description of the Prior Art

With a conventional Charging/Discharging Device, a primary or secondary battery or capacitor, for example, such as the unilaterally installed current pool terminal electrode board, of a prior art, illustrated in Fig. 1, the idea is to have a current pool terminal T100 installed on one side of each electrode board P100, meant to converge outfeeding or

infeeding currents, or alternatively to serve as a serial or parallel conjunction point for communication with other electrodes, as with such executions there is but one side instead of both on the electrode board where infeeding or outfeeding current transits, what follows inevitably on the electrode boards when larger currents were transitting as input or output is want of uniformity of current density on portions of electrode board adjacent to the current pool terminals and on portions of electrode remote from the current pool terminal T100, since this is a one-way current path, the internal impedance is necessarily larger; with more advanced design, still conventional, current pool terminals were provided on two or more than two locations, so that the electrode board is equipped with two or more than two outputting or inputting current paths, so that the internal impedance is reduced, further more, the two or more than two current pool terminals on electrode boards of like polarities and of identical voltage specifications, disposed in a tank of like electrodes or dissimilar electrodes are parallelled together by means of a rod conductor; or alternatively the same rod conductor serves to interconnect current pool terminals of dissimilar electrodes in a tank of dissimilar electrodes in serial or compound serial/parallel combinations; structurally the positive electrode board and the negative electrode board is configured circular, or nearly circular, or ellipsoidal, or triangular or polygonal, including: quadrilateral, quinquangular, six-sided, seven-sided, eight-sided and higher-order sided polylaterals, as regards its low impedance current pool execution it can be: (1) having one or more individually outwardly extending current pool

terminals installed on two or more sides of the electrode board, shown in Fig. 2 is an illustration of one current pool terminal fitted to either side of the electrode board; or instead two or more than two current pool terminals T100 are mounted on one side or more sides of the electrode board P100, to thereby account for two or more than two current input or output paths, thus achieving a lowering of internal impedance, shown in Fig. 3 is an illustration of two current pool terminals installed on sides opposite each on the electrode board; or alternatively (2) having one or more conductive penetration holes S100 installed individually on chosen quarters or middle quarters on two or more than two sides abutting the exteriority of the electrode board P100, or instead having same, but at least two, on chosen quarters on one side or on more sides, and that complemented with one or more isolation space or insolation gap reserved in chosen or middle quarters on two or more than two sides of aforementioned positive electrode board or negative electrode board, serving to accommodate passage of the rod conductor B100 once electrode boards of dissimilar polarities are intercrossed and set in order, without coming into contact, or instead the same may be replaced with one or more isolated penetration holes each sized larger than the rod conductor, so that the electrode board is equiped with two or more that two input or output current paths, and that in order to reduce the internal impedance of the battery installations, Fig. 4 illustrates an example of the electrode board equiped with two penetration holes and two isolation gaps structured accordingly; such an improved structure, while it, by increasing current paths in the charge storage/discharging devices, does achieve in reduction of the internal impedance

of the stroage discharge devices, polylateral and multiple path interconnected in series or parallel between individual tanks of electrodes involved in the art will necessarily mean increased production costs and more time and labor required in the production process.

## SUMMARY OF THE INVENTION

Charging/Discharging Device featuring one or more current pool means so that the electrode board is furnished with multiple current pool paths, and with current pool terminals in tanks of like electrode polarities or those in tanks of dissimilar electrode polarities but alike in voltage specifications and electrode polarities boards connected in parallel, or alternatively with current pool terminals between boards of dissimilar electrode polarities in tanks different in electrode polarities interconnected in series or in compound serial parallel combinations, and that complemented by having the exteriority of the positive or negative electrode board on both sides of individual electrode tanks made into a low impedance structure that is favorable to incoming/outgoing confluent currents.

## BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an illustration of a prior art current pool terminal electrode board provided unilarterally;

Fig. 2 is an illustration of an example whereof a current pool terminal is provided on either side of an electrode board;

Fig. 3 is an illustration of an example whereof two current pool terminals are provided on opposite sides of an electrode board;

Fig. 4 is an illustration of an example whereof the electrode board is furnished with two penetration holes and two isolation gaps;

Fig. 5 illustration, in individual electrode tanks, structure of current pool conductor of which the exteriority of the external electrode board is executed integral with or reinforced with a thickened plate;

Fig. 6 illustrates a side view of what is shown in Fig. 5;

Fig. 7 illustrates what is shown in Fig. 5 as executed in like polarity on like polarity parallel assembly;

Fig. 8 illustrates, as of each independently installed electrode tank, a current pool conductor assembly executed in web form on the external side of the external electrode board;

Fig. 9 gives a side view of what is shown in Fig. 8;

Fig. 10 illustrates what is shown in Fig. 8, executed in like polarity on like polarity parallel assembly;

Fig. 11 illustrates, for each independently installed electrode tank, the current pool conductor assembly of which the exteriority of the external electrode board is configured in strips;

Fig. 12 is a side view of what is shown in Fig. 11;

Fig. 13 is an illustration of what is shown in Fig. 11, executed such that a like-polarity parallel connection assembly is the theme;

Fig. 14 is an illustration of Fig. 5 with the current pool terminals for each independent electrode tank executed in multiple serial connection layout;

Fig. 15 illustrates an execution of the electrode board whereof the exteriority comprises plate conductor assembly,

such that the board is furnished with two or more than two current pool terminals;

Fig. 16 is a side view of what is shown in Fig. 5;

Fig. 17 is an illustration of what is shown in Fig. 5 such that the current pool terminal in each independent electrode tank is executed in multiple compound serial/parallel combinations;

Fig. 18 is one example of the electrode board complete with a current pool terminal, according to the invention;

Fig. 19 is a side view of what is given in Fig. 18;

Fig. 20 is a second embodiment of the electrode board complete with current pool terminal according to the invention;

Fig. 21 is a side view of what is given in Fig. 20;

Fig. 22 is a third embodiment of the electrode board complete with current pool terminal, according to the invention;

Fig. 23 is a side view of what is given in Fig. 22;

Fig. 24 is a fourth embodiment of the electrode board complete with current pool terminal, according to the invention;

Fig. 25 is a side view of what is shown in Fig. 24;

Fig. 26 is a fifth embodiment of the electrode board complete with current pool terminal, according to the invention;

Fig. 27 is a side view of what is shown in Fig. 26;

Fig. 28 is a sixth embodiment of the electrode board complete with current pool terminal, according to the invention;

Fig. 29 is a side view of what is shown in Fig. 28;

Fig. 30 is a seventh embodiment of the electrode board complete with current pool terminal, according to the invention;

Fig. 31 is a side view of what is shown in Fig. 30;

Fig. 32 is an eighth embodiment of the electrode board complete with current pool terminal, according to the invention;

Fig. 33 is a side view of what is shown in Fig. 32;

Fig. 34 is a ninth embodiment of the electrode board complete with current pool terminal, according to the invention;

Fig. 35 is a side view of what is shown in Fig. 34; and

Fig. 36 is an example of the invention charging/discharging device on an assembly of penetration holes with rod conduction.

**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

Charging/Discharging Device to be connected into a tank of identical polarity electrodes, or a tank of dissimilar polarity electrode by means of coupling conductors, whereof current pooling terminals of identical potentials and identical polarity are in parallel, or serving to be connected with current pooling terminals between pole boards of dissimilar polarities in a tank of dissimilar electrodes, executed in serial connection or compound serial/parallel connection; on the exterior side of the electrode board, of positive or negative polarity, on both sides of the individually installed electrode tank is executed a low resistance current pool structure of any chosen geometry to facilitate infeeding/outfeeding of confluent currents,

executed in the form of inflowing/effluent pooling terminals, or that incorporated with parallel current pool conductor, or as made from material of better conductivity with a view to reduce the resistance to infeeding/outfeeding confluent currents; structurally it can comprise singly or plurally any or some of the features outlined below:

- plate or strip or web form structure for connection to respective output/input current pool terminals T100 of which individual electrode tanks are installed outside the positive or negative polarity electrode board P200, on both sides of the electrode tank, or other low impedance current pool conductor assembly made of chosen materials in otherwise geometrical configurations;
- plate or strip or web form structure for connection to respective output/input current pool terminals of which individual electrode tanks are installed outside the positive or negative polarity electrode boards on both sides of the electrode tank, with areas between consecutive output current pool terminals interconnected by welding, soldering, rivetting or screwing technique, or prestressed, or burial or inlay or otherwise means, to facilitate pooling of input/output currents, or other low impedance current pool conductor assembly of chosen material in otherwise geometrical configuration;
- plate or strip or web form structure with output/input current pool terminals associated with the overall storage/discharging device being installed outside the positive or negative polarity electrode board on both sides of the electrode tank, to facilitate transitting of incoming/outgoing current pool, or low impedance current

pool conductor assembly of chosen material but otherwise geometrical configuration, said plate form encompassing thickened board of uniform or non-uniform, tilted sheets;

- current pool terminals for input/output purposes secured by soldering, welding, rivetting, screwing, prestressing technique or by burial, inlay or otherwise means among themselves, established outside the positive or negative polarity electrode boards on both sides of the electrode tank, led to correspondent terminals on the master storage/Discharge Assembly, in plate or strip or web form to facilitate pooling of incoming/outgoing currents, being a low impedance conductive assembly of a chosen geometry or otherwise materials;
- Interconnect pieces or bars of conductors of a chosen geometry and of chosen materials interposed between parallel conductors between sets of input/output current pool terminals on a plurality of electrode boards of like polarities;
- Interconnect pieces or bars of chosen geometry and material incorporated additionally between a plurality of serially parallelly connected conductors on input/output current pool terminals on sets of electrode boards of dissimilar polarities.

In a low impedance current pool assembly for a storage/discharge device structured accordingly the positive or negative polarity electrode board can be composed of other low impedance materials where needed different from those low impedance structure disclosed in the foregoing in respect of its exteriority, and as part of which the current pool terminals for input/output purposes can be provided singly or

plurally, on single side or on more than one side.

A number of examples of a low impedance current pool assembly for a storage/discharge device incorporating one or more of the above-mentioned features and their applications will be described below, lots of geometry do apply for this design, options are also open as to the number of sides of the current pool terminals and the number of the terminals themselves, our description will go with reference to the example given in any of Fig. 5 through Fig. 35, which by no means serves to delimit the scope of application of the low impedance current pool assembly of the subject storage/discharge device, to set off the chief features of the subject design, casings which had long been employed in conventional storage/discharge devices as well as isolation shields, mats or membranes laid between electrode boards of dissimilar polarities, of known common art, will only be mentioned briefly in the course of the descriptions following next in the context.

The subject low impedance structure of the low impedance current pool assembly of the subject storage/discharge device includes improvement of the exteriority of the positive or negative polarity electrode board and current pool terminals, on both sides of each independently installed electrode tank, as illustrated in Fig. 5 through Fig. 10, noted hereinbefore, the design in respect of the improvement of the positive or negative exteriority of the electrode board on both sides of the independently installed electrode tank is thus: having one or more piece of parallelled positive electrode board P100 and as matched thereto, one or more piece of parallelled negative electrode board P100, set in individual electrode tanks to

constitute individual electrode pairs, then have flat plate form current pool conductor assembly of chosen material and made to specified thickness installed way between respective current pool terminals on the exteriority of positive or negative electrode board P200 on both sides of each individual electrode tank, so that it is made that the impedance prevalent way between the current pool terminals on the periphery of the external positive or negative electrode board P200 is inferior to that impedance prevailing across the normal electrode surface duly applied with one layer of chemically active material in lattice configurations on the same electrode board; shown in Fig. 5 is an illustration of the current pool conductor assembly of a plate form or thickened plate form or integral with the exteriority of the external electrode board, in individual electrode tank, of the subject storage/discharge device, the plate form being uniform or non-uniform in thickness, at a slope in place; a side view of what is given in Fig. 5 is shown in Fig. 6; shown in Fig. 7 is an execution of what is shown in Fig. 5 with like polarity on like polarity parallelling; way between respective current pool terminal T100, outside the positive or negative polarity electrode board P200 on both sides of individual electrode pairs installed in aforementioned individual electrode tank, may be processed straight conductive assembly of given thickness and in webform, such as that illustrated in Fig. 8, still pursuant to the invention, a side view of what is shown in Fig. 8 is given in Fig. 9; an execution of the example shown in Fig. 8 with like polarity parallelling is shown in Fig. 10.

In the individual electrode pairs formed in the independently installed electrode tank, way between the

current pool terminals outside the positive or negative polarity electrode board P200 on both sides, pieces or webform or stripe form current pool conductor assembly are interconnected by soldering, welding, rivetting, screw coupling, prestressed bonding, internal burial, laying or otherwise technique, in order that the impedance prevailing between the current pool terminals T100 on the perimeter of the externally provided positive or negative polarity electrode boards be controlled inferior to the impedance on the normal electrode surface on the other side of the same electrode board that is applied with a lattice work of chemically active coating; shown in Fig. 11 is an illustration of the strip-formed current pool conductor assembly on the outside of the externally provided electrode board in each independently installed electrode tank of the low impedance current pool structure according to the subject storage/discharge device, a side view of this illustration is given in Fig. 12, as dependent on Fig. 11, an execution of what is shown in Fig. 11 with like polarity parallelling is shown in Fig. 13.

The electrode board with plate form terminals on the outside as aforementioned is good for connection to two or more than two independent electrode tanks, and hence good for like polarity on like polarity parallelling or opposite polarity serial connection under the same voltage specifications, a multiple serial combination made with respect to the current pool terminals on respective independent electrode tank illustrated in Fig. 5 is illustrated in Fig. 14.

Additionally, where required on that side of the externally provided plate-form terminalled electrode board

meant to couple with current pool terminals coming from other electrode tanks may be mounted two or more than two current pool terminals to thereby account for multiple coupling possibilities so that impedance is lowered in the long run; an example of this is shown in Fig. 15; a side view of this presentation is given in Fig. 16, as dependent on Fig. 15.

In the subject storage/discharge device in general, in the low impedance current pool structure, in the current conductor assembly outside the positive or negative electrode board P200 on both sides of the individual electrode tank in particular, are provided two current pool terminals T100 to accommodate serial or parallel combination with each electrode tank where multiple sets of electrode tanks are deployed for application; shown in Fig. 17 is as illustration of multiple serial parallel combination sourced to each current pool terminal on the part of each independent electrode tank shown in Fig. 5.

In the subject storage/discharge device specifically with respect to its low impedance current pool structure, with a view to further reduce the impedance on the part of both the current pool terminal and of the electrode board, a feasible approach is to process the current pool terminal trapezoidal extending outwardly, such that the wider base of the trapezoidal current pool terminal is coupled to the electrode board, whereby the internal impedance on the terminal, output or input, of the electrode board, is duly reduced.

Examples of application of the aforementioned trapezoidal current pool terminal and electrode boards include: normal electrode boards P100 with both sides applied with latticed chemically active coating, two or more than two outputting or inputting current pool terminal T100 on the outside of the

positive or negative polarity electrode board P200 on both sides of each electrode tank, possible for mounting on one side or more sides of the electrode board P100 or the positive or negative electrode board P200, or for one or more current pool terminal to be installed on two or more sides of the electrode board P100 or of the positive or negative polarity electrode board.

Shown in Fig. 18 is one embodiment of the electrode board integral with current pool terminal of a low impedance current pool structure pursuant to the invention storage/discharge device, featuring two trapezoidal current pool terminals T100 in the middle of one external side of the positive or negative electrode board P200 on both sides of the individually installed electrode tank, just to make for a correspondent positive or negative electrode pair with the electrode board shown in Fig. 20, a side view of what is shown in Fig. 18 is shown in Fig. 19.

Represented in Fig. 20 is a second embodiment of the invention storage/discharge device with low impedance current pool assemblies with reference to its electrode board integral with current pool terminals, whereof trapezoidal current pool terminals T100 are provided on both sides of the exteriority of the positive or negative electrode board P200 on both sides of each individual electrode tank, to form electrode pair with electrode board symmetrically shown in Fig. 18, a side view of what is shown in Fig. 20 is given in Fig. 21.

Represented in Fig. 22 is a third embodiment of the electrode board complete with current pool terminals of a low impedance current pool design of the invention storage/discharge device, whereof on either of both external

sides of the positive or negative electrode board P200 on both sides of individual electrode tank are installed two trapezoidal current pool terminals T100, extending outwardly, characterized in that a dimensional differential exists between the hunch peak of current pool terminals on the same sides of the trapezoid and the edges on both sides of the electrode board so that once an electrode pair is produced by superposing the backsides of the two similarly configured electrode boards, interwoven superposition is made involving the positive/negative polarity electrodes of adjacent electrode boards, with current pool terminals T100 intercrossing but not intervening each other, so as to facilitate interactive coupling, with better current pooling effects realized on the basal area of the wider trapezoid; a side view of what is shown in Fig. 23 is given in Fig. 22.

Represented in Fig. 24 is a fourth embodiment of the electrode board complete with current pool terminals of a low impedance current pool design of the invention storage/discharge device, comprising three externally extending trapezoidal current pool terminals T100 on each external side of the positive or negative polarity electrode board P200 on both sides of the electrode tank, characterized in that a dimensional differential exists between the hunchback of current pool terminals on the same side of the trapezoid and the edges on both sides of the electrode board, so that once an electrode pair is produced by superposing the backsides of the two similarly configured electrode boards, interwoven superposition is made involving the positive/negative polarity electrodes of adjacent electrode boards, with current pool terminals T100 intercrossing but not

intervening each other, so as to facilitate interactive coupling, with better current pooling effects realized on the basal area of the wider trapezoid; a side view of what is shown in Fig. 24 is given in Fig. 25.

A fifth embodiment of the electrode board with current pool design of the invention storage/discharge device highlighted with a low impedance current pool feature is represented in Fig. 26, comprising an outwardly extending trapezoidal current pool terminal T100 on two opposite sides of a quadrilateral positive or negative electrode board P200 on both sides of individually installed electrode tank, characterized in that a dimensional differential is maintained between the hunch peak of current pool terminals on the same sides of the trapezoid and the edges on both sides of the electrode board so that once an electrode pair is formed by superposing the backsides of the two similarly configured electrode boards, interwoven super-positions is made involving the positive/negative polarity electrodes of adjacent electrode boards, with current pool terminals T100 intercrossing but not intervening each other, so as to facilitate interactive coupling, with better current pooling effects realized on the basal area of the wider trapezoid, a side view of what is shown in Fig. 26 is given in Fig. 27;

A sixth embodiment of the electrode board with a low impedance current pool design of the invention storage/discharge device is illustrated in Fig. 28, comprising two outwardly extending trapezoidal current pool terminals T100 on two opposite sides of a quadrilateral positive or negative electrode board P200 on both sides of individually installed electrode tank, characterized in that a dimensional

differential is maintained between the hunch peak of current pool terminals on the same sides of the trapezoid and the edges on both sides of the electrode board so that once an electrode pair is formed by superposing the backsides of the two similarly configured electrode boards, interwoven superpositions is made involving the positive/negative polarity electrodes of adjacent electrode boards, with current pool terminals T100 intercrossing but not intervening each other, so as to facilitate interactive coupling, with better current pooling effects realized on the basal area of the wider trapezoid, a side view of what is shown in Fig. 28 is given in Fig. 29.

A seventh embodiment of the electrode board with a low impedance current pool feature is represented in Fig. 30, comprising three outwardly extending trapezoidal current pool terminals T100 on two opposite sides of a quadrilateral positive or negative electrode board P200 on both sides of individually installed electrode tank, characterized in that a dimensional differential is maintained between the hunch peak of current pool terminals on the same sides of the trapezoid and the edges on both sides of the electrode board so that once an electrode pair is created by superposing the backsides of the two similarly arrayed electrode boards, interwoven superposition is made involving the positive/negative polarity electrodes of adjacent electrode boards, with current pool terminals P100 intercrossing but not intervening each other, so as to facilitate interactive coupling, with better current pooling effects realized on the basal area of the wider trapezoid, a side view of what is shown in Fig. 30 is given in Fig. 31.

An eighth embodiment of the electrode board with a low impedance current pool design of the invention storage/discharge device is illustrated in Fig. 32, comprising an outwardly extending trapezoidal current pool terminal T100 on two opposite sides of a quadrilateral positive or negative electrode board P200 on both sides of individually installed electrode tank, characterized in that a dimensional differential is maintained between the hunch back of current pool terminals on the same sides of the trapezoid and the edges on both sides of the electrode board so that once an electrode pair is created by superposing the backsides of the two similarly configured electrode boards, interwoven superposition is made involving the positive/negative polarity electrodes of adjacent electrode boards, with current pool terminals P100 intercrossing but not interfering each other, so as to facilitate interactive coupling, with better current pooling effects realized on the basal area of the wider trapezoid, a side view of what is shown in Fig. 32 is given in Fig. 33.

A ninth embodiment of the electrode board with a low impedance current pool design of the invention storage/discharge device is illustrated in Fig. 34, comprising two outwardly extending trapezoidal current pool terminals T100 on two opposite sides of a quadrilateral positive or negative electrode board P200 on both sides of individually installed electrode tank, characterized in that a dimensional differential is maintained between the hunch back of current pool terminals on the same sides of the trapezoid and the edges on both sides of the electrode board so that once an electrode pair is created by superposing the backsides of the two

similarly configured electrode boards, interwoven superposition is made involving the positive/negative polarity electrodes of adjacent electrode boards, with current pool terminals P100 intercrossing but not interfering with each other, so as to facilitate interactive coupling, with better current pooling effects realized on the basal area of the wider trapezoid, a side view of what is shown in Fig. 34 is given in Fig. 35.

It is to be noted that any and all the examples, embodiments of the invention represented in Fig. 5 through Fig. 35 are illustrative but not restrictive of the scope of application of the invention, in its application to quadrilateral or nearly quadrilateral electrode boards, apart from the provision of current pool terminals on two or four sides, it is also feasible to provide current pool terminals on three sides of the electrode board too, and the configuration of said electrode board is not restricted to a quadrilateral only, indeed it can instead take the form of a circle, a near circle, an ellipse, a near ellipse, a triangle, a polylateral, including without limitation: triangle, quadrilateral, quintuple lateral, hexagon, septuple lateral, octuple lateral, with each electrode board furnished with two or more than two current pool terminals so that each electrode board is equipped with two or more than two current pooling loops.

In each and every examples covered in Fig. 24 through Fig. 35, save that special features emerge by reason of applicational particularities respecting the electrode board in use, some or all of the following features are inherent:

- the positive polarity electrode board and negative polarity electrode board being configured circular, nearly circular,

elliptical, nearly elliptical, triangular or polylateral, such as, for example, quadrilateral, quintuple lateral, hexagonal, septuple lateral, octuple lateral, and polylateral of even higher orders, to accommodate parallel combination with current pool terminals of identical voltage specifications and of like polarities on each working electrode board from paired or dissimilar electrode tanks; or alternatively to accommodate coupling with current pool terminals between electrode boards of opposite polarities in different electrode tanks, the coupling being serial, parallel or compound serial/parallel combinations;

- where the low impedance current pool structure of the storage/discharge device is to be applied on non-polar storage/discharge device, a capacitor, for instance, said positive electrode board and negative electrode board will have to be replaced with a non-polar first electrode board and a non-polar second electrode board;
- where the rod conductor is meant for penetration across and coupling with conductive penetration holes on an electrode board, and once coupled together the rod conductor and the electrode board exhibit good conductive state; it is then because that the rod conductor is composed of a circular, square, triangular, elliptical or otherwise configured geometry, hardcore conductive bar or hollow-set bar, or flexible tube of non-closed hollow-set structure having axial fissures thereon;
- said rod conductor may be further processed to have both ends thereof embossed with a cap, screwnut, screwed, unilaterally compressioned cushion-insulated isolation bumper to exert compression against electrode board sets

thereby enhancing the stability of the assembly at large;

- the rod conductor in the above-mentioned structure serves to penetrate the conductive penetration holes on like polarity electrode boards in discharge of its parallel current pooling capabilities; or in discharge of serial capabilities by penetrating across dissimilar polarity electrode conductive penetration holes; or still serves to consummate parallel current pooling and serial combination functions by penetrating simultaneously across like polarity and dissimilar polarity electrodes;
- where the said rod conductor is composed of hollow-set tubes, it is feasible, where preferred, to install gas or fluid pumps and cooling radiator or on the contrary temp. upgrading heater serving to pump the gaseous or fluid liquids through tubular rod conductor duly modulated with cooling or heating, that is, temp. regulations;
- where a rod conductor serves as the structure for parallel current pool and the fluid passing by is an isolation fluid, then the tubular rod conductor on all electrodes of like potential level can altogether form a straight series loop or parallel loop;
- where a rod conductor serves the purpose of parallel current pool concurrent with series combination applications, rod conductors of dissimilar potential levels can be connected in series or parallel by means of isolation conduits to facilitate passing of insulant gaseous or fluid liquids in respect of which temp. regulation is possible with cooling or heating techniques;
- isolation rings or tubular insulants to be inserted into the isolation penetration holes on the rod conductors and

on the electrode boards to be run through, to safeguard insulation and further enhance structural safety among electrode boards themselves;

- installation of insulation shoes in isolation gaps on electrode boards rod conductors will pass and the rod conductors themselves to ensure insulation and further upgrade electrode board to electrode board structural stability;
- installation of spacing stability shoes on the rod conductors and the isolation space on the electrode board which the rod conductor will pass, to ensure insulation and as an effort to enhance additionally electrode board to electrode board structural security;
- two or more than two current pool terminals each extending outwards on two or more than two sides of individual electrode boards to facilitate multiple parallel combination between electrode boards of like polarities, or alternatively to make serial combination between electrode boards of dissimilar polarities and to enable concurrently two or more than two current paths in the wake of any input or output current on a same electrode board in the storage battery, so that the internal impedance on the part of the battery when an input or output is in progress, is duly reduced;
- the insulation being composed of partitioned insulants of dissimilar polarities or insulant membranes, insulant mats furnished between electrode boards of dissimilar polarities; where the insulants are installed by coupling technique, by sleeving, for example, they may be executed in insulation sleevings applied onto electrode boards of both polarities

or instead onto electrode boards of either polarity, positive only or negative only;

- the container of the storage/discharge device being a shell casing, and composed of insulant or non-insulant materials, serving to protect the electrode boards too; where it is made of non-insulant materials, the interior of the casing and the interspacings of the electrodes within must be covered with insulant reinforcements.

Shown in Fig. 36 is an embodiment of the invention of which the storage/discharge device is composed of penetration holes and rod conductors.

In a low impedance current pool assembly which forms part of the invention storage/discharge device described hereinbefore, apart from the input/output current pool terminals on the positive, negative electrode boards on both sides of the electrode tank which, as required, may be installed singly or plurally, on one side or on more sides, all the other electrode boards can be structured such that one or more current pool terminal individually extending outwards are installed on two or more than two sides on individual electrode boards; or such that two or more than two current pool terminals are all installed on just one side or more sides, to enable multiple current path parallelling converged on electrode boards of like polarities, or instead multiple path series connection between electrode boards of dissimilar polarities; structurally, the current pool terminals are made of hardcore or hollow-set tubular rod conductors bearing circular, square, otherwise geometric configurations, to be mounted into position across the conductive penetration holes present way between the electrode boards of the

storage/discharge device, so that parallel connection is made possible with electrode boards of like polarities, or alternatively serial connection is made among electrode boards of dissimilar polarities, so still so that a combined serial/parallel connection is consummated: further parallel execution is extended to encompass the current pool terminals, being conductor themselves, such that they, of identical voltage specifications and on electrode boards of like polarities, from the same or different electrode tanks, the extension goes to series connection too, by interconnecting current pool terminals between electrode boards of different polarities from dissimilar electrode tanks serially and hence compound serial/parallel combination is made possible forthwith, and that complemented with the effort of a low impedance structure whereby input/output current pool terminals are combined to facilitate pooling of incoming/outgoing currents, on the exteriority of positive or negative electrode boards on both sides of individually installed electrode tanks, or alternatively supplemented with parallel run current pool conductors in an effort to reduce impedance to the confluent incoming or outgoing currents.

All in all, the subject storage/discharge device integral with current pool structure, by the disclosure given in the foregoing, is deemed truly a worthwhile piece of invention in view of structural improvements as well as enhancement of structural strengths.